

# THE TIMING OF BREEDING SEASON AND INTER-BREEDING BETWEEN THE COLOUR PHASES IN THE INDIAN REEF HERON, *EGRETTA GULARIS* (BOSC)<sup>1</sup>

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The Indian Reef Heron, *Egretta gularis* (Bosc) occurs on the coast of West Africa, the Red Sea area and the western coast of the Indian Ocean (Ripley *in press*). Though the bird is not uncommon on the northern shores of the Arabian Sea, coast of Pakistan, western coast of India, Laccadive Islands and Sri Lanka (Sálim Ali and Ripley 1968), only four of its breeding sites in the Indian region have so far been recorded. It was found breeding near Chilaw, Sri Lanka, "about a hundred years ago" by Layard (Henry 1971),

(1954) observed it in Kandla Creek, Kutch, and Kirkpatrick (1961) observed it near Nellore (Andhra Pradesh). Since there are no records of the breeding of this heron in between the sites so far recorded, it is presumed that the bird "possibly migrates locally to special areas" (Sálim Ali and Ripley 1968).

In view of the fact that only a few observations have been made on the breeding of the Reef Heron in India, it is not surprising that numerous gaps exist in our knowledge of this bird's Indian populations. A look at Table 1

TABLE 1  
NESTING OF THE INDIAN REEF HERON IN THE INDIAN REGION

Locality	Nesting period	Authority
1. Chilaw (7°37'N, 79°53'E.)	May and June	Layard (as quoted by Henry, 1971)
2. Karachi (24°51'N, 67°04'E.)	First week of March to early June	Eates (1926)
3. Kandla (23°N, 70°10'E.)	August and September	Sálim Ali (1954)
4. Nellore (14°27'N, 80°02'E.)	Around April and May	Kirkpatrick (1961)
5. Gogha	February to August-September	Present report

but its breeding in Sri Lanka has apparently not been recorded since then (Henry, loc. cit.). Eates (1926) observed it breeding in Karachi

will reveal that the breeding period recorded by Eates (loc. cit.). Sálim Ali (loc. cit.) and Kirkpatrick (loc. cit.) vary widely with no definite trend, and because of this, any generalization regarding the timing of the breeding season of this bird in India has been a difficult proposition. Secondly, the white and dark (grey) phases of the bird have been known to interbreed in Africa, but there has

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been no evidence of such happenings in India (Sálim Ali and Ripley 1968).

The observations reported here were made in Gogha and Bhavnagar. The latter is a flourishing coastal city (21°46'N, 72°11'E) on the gulf of Khambhat. Gogha, at one time a thriving port but now a small town of about 1,300 houses with a population of about 7000 people, is located 19 km southeast of Bhavnagar and spread over a strip of land jutting out to a point in the gulf of Khambhat.

#### OBSERVATIONS

We (R.M.N. and B.H.P.) accidentally found the Indian Reef Heron nesting in Gogha first in February 1979; and some of us paid four successive visits later on to observe the bird nesting there until the first week of September. The main nesting colony was located in a grove of trees within an enclosed quadrangle of the mamlatdar's office. No other birds except a pair of crows nested in these trees during the study period. Our inquiries with the old staff of the office revealed that the herons have been nesting there at least for the last fifteen years. Pradumn Desai, a keen naturalist residing in Bhavnagar had seen the herons nesting there (in the quadrangle of mamlatdar's office) several years back.

One of us (B.M.P.) observed the heron nesting also in Bhavnagar during the last week of July 1979; here, the bird was nesting in a mixed heronry of the Cattle Egret (*Bubulcus ibis*), Night Heron (*Nycticorax nycticorax*), and White Ibis (*Threskiornis aethiopica*) in a school compound. The earlier field notes of one (B.M.P.) of us indicate the nesting of the heron in Bhavnagar in the previous years as well; the heron was observed nesting there with Cattle Egret, Night Heron and White Ibis in July 1973 and also in August 1974.

All the nesting colonies observed by us in Gogha and Bhavnagar were in urban areas; the Karachi colony observed by Eates (loc. cit.) was also in urban areas, whereas the Kandla colony observed by Sálim Ali (loc. cit.) was on a tide-swept island in a creek.

The bird can use a wide variety of trees for nesting. The trees used by the birds we observed nesting, were the peepul *Ficus religiosa*, *Ficus tsila* and neem *Melia azadirachta* (syn. *Azadirachta indica*). Eates (loc. cit.) observed the birds nesting on the peepul, jujube *Zizyphus jujuba*, Portia tree *Thespesia populnea*, Manila Tamarind *Pithecolobium dulce* and Jambun *Eugenia jambolina*. Kirkpatrick (loc. cit.) observed the bird breeding in *Ficus* trees and Sálim Ali (loc. cit.) in mangroves.

We could record the timing of the heron's breeding season at Gogha. On our first visit to Gogha, we saw many pairs of the heron engaged in courtship and nest-building activities on 23 February 1979. We (R.M.N. and B.H.P.) paid a second visit to the place on 6 April 1979, when we could spend more time watching the herons nesting there in three groups: (1) The largest concentration of 86 nests located in a grove of 9 trees, was in the quadrangle of the mamlatdar's office, (2) another group of 17 nests was located on a roadside tree, and (3) the third group of 6 nests was on a roadside Tamarind tree. All the nests (total hundred and four) were attended by the parents; some pairs were engaged in nest-building whereas most others were either incubating or feeding the chicks. We (R.M.N. and A.P.M.) paid a third visit to Gogha on 5th June, 1979, when we found the birds nesting only in the quadrangle of mamlatdar's office, there being no trace of the nests or the herons in the other two places where we had found them nesting earlier. In the heronry, there were about 75 nests of

which a few appeared deserted and the rest had chicks; most of the chicks were grown up and perching or hopping around on branches. Only in five nests, the small chicks were being brooded by the parents. One of us (B.M.P.) paid a visit to Gogha on the 9th and 26th of August 1979, and again on the 2nd of September 1979. There were 3 nests with eggs, 1 with chicks and a few deserted nests on 9 August, whereas there were 2 nests with chicks and a deserted nest on 26 August, and a few grown up chicks perching around two empty nests on 2nd September.

We observed in Gogha that the mates within a nesting pair were usually of the same colour phase, that is both the mates were either dark or white. However, we found evidences that some interbreeding between the two phases also occurs. In one pair that we observed nest-building for about half an hour, one mate was white while the other was dark. In another nest, we observed a parent in the white phase relieving its mate in dark phase from the duty of incubating eggs.

#### DISCUSSION

The Indian Reef Heron is a common sight throughout the year on the sea coast near Gogha and Bhavnagar. The herons we observed breeding there were apparently derived from the local population. The herons have been breeding in Gogha and possibly also in Bhavnagar since many years, but, the breeding was not reported until now. We have some unconfirmed reports suggesting that the herons breed also in Porbandar and Surat (both in Gujarat) as well. It is quite probable, therefore, that the heron populations at least on the coast of Gujarat, if not all along the Indian coast, are largely sedentary and that many of the bird's breeding sites have remained hitherto unreported.

The herons in Gogha, had a long nesting season spanning a period from February to August-September, the peak period having been from February to June. Nesting period of the heron recorded elsewhere by the earlier workers falls within this period (Table 1). Apparently the herons have a long nesting season all along the sea coast from Pakistan to Sri Lanka; the mildness of the maritime climate and a ready availability of marine food over a long period, would favour a long breeding season.

The occurrence of the heron's peak breeding in the summer contrasts sharply with that of the Little Egret (*Egretta garzetta*) occurring in the monsoon. The Little Egret, like the other egrets, spoonbill and ibises, seeks its animal food inland and is consequently dependent on the monsoon for an increased supply of food needed for the reproduction. The difference in the timing of breeding between the Indian Reef Heron and the Little Egret would reduce the chances of possible introgression between these two closely related species.

During the heron's peak breeding period in summer, the other Ciconiiformes (with a possible exception of the Night Heron) that may compete with the Indian Reef Heron for the nesting sites, are not breeding. One should expect the heron, therefore, to breed in their heronry exclusively during the summer. On the other hand, several species of Ciconiiformes and the other birds, like Cormorants, may compete with the heron for the nesting sites and one may find the herons breeding in the mixed heronry during that season. This explains the fact that Sálím Ali (loc. cit.) who had seen the herons breeding during the monsoon found it breeding in the mixed heronry, whereas Eates (loc. cit.) and Kirkpatrick (loc. cit.) who saw the herons breeding in summer found them breeding exclusively. In



## BREEDING SEASON OF THE REEF HERON

Gogha, we saw the herons breeding in exclusive heronry throughout its breeding season from February to August. The only other colonial tree-nester that bred any time during this period in Gogha was the Spoonbill, but it had segregated from the Indian Reef Heron for nesting.

On the African coast, the dark and white phases of the heron are known to interbreed

and the form intermediate between the two has been described. In view of the fact that interbreeding between the dark and white phases occurs also within an Indian population of the heron, the forms intermediate between the two phases would be expected to occur in India as well, though so far not recorded.

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